

HR-274 Construction and Evaluation of Submerged Vanes for Stream Control

Abstract

The objective of this study was to determine the practicality and effectiveness of using submerged vanes ("Iowa Vanes") to control bank erosion in a bend of East Nishnabotna River, Iowa. The vane system was constructed during the summer of 1985. It functions by eliminating, or reducing, the centrifugally induced helical motion of the flow in the bend, which is the root cause of bank undermining. The system was monitored over a 2-year period, from September 1985 to October 1987. Two surveys were conducted in the spring of 1986 in which data were taken of depths and velocities throughout the bend and of water-surface slope. The movement of the bank was determined from aerial photos and from repeated measurements of the vane-to-bank distance. The system was found to perform satisfactorily. The bankfull scour depths and velocities along the bank have been reduced significantly; and the movement of the bank has been stopped or considerably reduced. The improvements were obtained without changing the energy slope of the channel. Areas of design improvements were identified.